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ABSTRACT

A total of 51 students participated in a study to determine the effect of a behaviorally oriented individualized instruction program on the objective grammar proficiency of academically deficient college freshmen. From a group of special students, 15 were randomly selected for the individualized instruction while 17 were assigned to sections of freshman English not using individualized instruction. A third group of students from regular English classes was used for comparison purposes. Students in all three groups were given a grammar test and wrote 250-word themes at the beginning of the 15-week semester. At the end of the semester, the students in all three groups took the standard department final examination, which included a grammar test and the writing of a 250-word theme. The findings suggested that the grammar skills of academically deficient students could be substantially improved; however, they did not support the notion that formal grammar ability transfers to theme writing. (FL)

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The Effect of Individualized Instruction on the Acquisition and Transfer of Grammar Skills of Academically Deficient Students.

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The Effect of Individualized Instruction on the Acquisition and Transfer of Grammar Skills of Academically Deficient Students.[1]

Pete Idstein and Dennis Carey
New Castle County School District

The major premise underlying Benjamin Bloom's recent work is that what any person in the world can learn, almost all persons can learn if provided with appropriate prior and current conditions of learning (Bloom, 1976). Advocates of mastery learning contend that over time, the educational distance between disparate groups of youngsters can be eliminated under the conditions stated above. This study attempted to delineate some of those conditions. Specifically, we sought to determine the effect of a behaviorally oriented individualized instruction program on the objective grammar proficiency of academically deficient college freshmen.

The major theoretical framework underlying the direct teaching of grammar in this study was the concept of mastery learning advanced by John Carroll (1963), Benjamin Bloom (1968, 1976) and James Block, (1973).

The specific methods employed here were the use of behavioral objectives, combined with operant techniques. The background involving this approach is addressed very nicely by Robert Zoellner (1969; 1972).

We also sought to determine the transfer (or lack of transfer) from grammar proficiency as measured by an objective grammar test to grammar proficiency in theme writing as measured by three judges.

The dichotomy between the popular assumption that transfer will occur and the empirical Murphyesque findings that it does not, has not changed much since the days when William James (1890) and E. L. Thorndike

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[1]Paper presented at the annual meeting of the American Educational Research Association, San Francisco, April 1979.

(1901; 1924) were laying a foundation with which to attack the proponents of faculty psychology. Three quarters of a century later we are still hard pressed to untangle conflicting opinions and findings regarding the transfer of training. The purpose of this study was to shed some empirical light on one small corner of this controversy. Specifically, does formal grammar training transfer to grammar proficiency in theme writing?

The study was conducted at the University of Delaware which, like many other colleges and universities, has instituted a program for special students who are academically deficient by usual admissions standards. At the University of Delaware, "academically deficient" is defined by a predicted freshman grade point average (GPA) below 1.7. The predicted GPA is computed from a prediction equation based on high school rank, SAT scores, the sex of the applicant, and the college in which he would matriculate.

The procedures used to individualize instruction were those which are by now well associated with mastery learning (Bloom, 1976). Students proceeded at their own rates through behaviorally specified tasks in two areas of the Freshman English program at the University of Delaware. These areas were grammar and theme writing. A point system was used to determine the student's final grade in the course. Points were given for mastery of a set of behavioral objectives covering both the grammar and theme writing component of the course. Finally, students had multiple opportunities to complete a given task.

METHOD

Subjects. All special students were invited to join a special section of Freshman English that would use individualized instruction.

A total of 35 volunteers responded. Since the special section could not accommodate this many students, 17 were randomly selected for the individualized instruction and the remaining 18 were assigned to one of the other sections of Freshman English not using individualized methods. We explained to the students that randomization was the most unbiased method of allocating the resources of the individualized instruction program. As a result of this allocation, the 18 special students who received non-individualized instruction became a randomly assigned control group to which performance of the individualized special group could be compared. A second comparison group, consisting of 20 regular students was randomly selected from all other regular students enrolled in the non-individualized sections of Freshman English. The three groups, then, consisted of specially admitted students who received individualized instruction (SI), specially admitted students who did not receive individualized instruction (SNI), and regularly admitted students who did not receive individualized instruction (RNI).

Measures. The English Department final examination which was given to all three groups consisted of three parts. Part one was grammar, which was measured by the 100 item beginning test from the test booklet of English Review Manual (Gowen, 1965). Part two was theme writing, which was measured by the results of a 250 word theme written during the examination. The written theme was rated on a ten point scale (0-9) on each of eight areas defined in Themes, Theories, and Therapy: The Teaching of Writing in College (Kitzhaber, 1963). These areas were focus and structure, material, paragraphs, sentences, words, grammar, punctuation and mechanics, and spelling. The rating was done by three full professors holding

Ph.D degrees in English. Typed and coded copies of the themes were rated by each rater independently. Thus, no rater knew the group membership of any theme or how that theme had been rated by the others. Part three tested content not related to this study.

Design. All three groups took the standard department final examination. In addition, all three groups were given a 100 item grammar test at the beginning of the 15 week semester. This test was identical to the grammar part of the department final examination in terms of sentence patterns. Also, each group wrote a 250 word theme at the beginning of the semester. These themes were judged from typed copies which were randomly mixed in with the themes from the department final examination. Consequently, they were judged in the same manner as the themes from the department final examination. As a result of the initial grammar test and written themes, pre and post measures were available for grammar and theme writing for all three groups, yielding a 2 X 3 mixed factor analysis of variance with pre-post comparisons as repeated measures.

Procedure. The grammar test and written themes were administered to all three groups during the first week of classes. Following the collection of these pre measures, the SI group received individualized instruction. The students were given a syllabus which described the procedures to be followed for the course. This syllabus informed students that they could proceed through the course at their own rates. The instructional procedures in the SI group involved working through a programmed grammar text (Gowen, 1965). At the end of each unit the student took a unit test either developed by Gowen or an alternate form developed by using identical sentence patterns. Each test consisted of ten items.

The criterion for passing a test was always 100%. If a student did not reach criterion, he was instructed to restudy the unit. He was then allowed to take an alternative form of the test for that unit. A student could be tested on a given unit three times. If he failed to reach criterion after three tries, he did not receive credit for that unit. For each unit of study successfully completed, the student received credit toward a final grade for the grammar subdivision of the course. Completion of specific units was required for the specific grade the student wished to receive. The syllabus provided a list of units required for any given grade.

The theme writing activities of the course consisted of the following: First, students were required to write a specific number (depending upon the grade they wished to receive) of thesis statements. These thesis statements were to tell the reader what the theme was about, what main points would be covered, and how the theme would be organized. Second, students were required to write a specific number of control (or introductory) paragraphs. These control paragraphs were to contain a thesis statement, a brief statement of the ideas to be developed, an indication of the approach to be taken in developing the theme, and definitions of any terms that the student felt needed defining. Third, students were required to write a specific number of full length themes which developed the processes outlined in the control paragraph. The syllabus specified the number of thesis statements, control paragraphs, and themes necessary to obtain any given grade. Performance on writing thesis statements, control paragraphs, and themes was judged by the instructor.

The class met three times weekly. The first class period of each week was reserved for grammar testing and theme writing. The two remaining weekly class periods were devoted to other course content and independent study.

Since the SNI and the RNI groups were randomly assigned to other sections of the English course, they were exposed to the variety of techniques that one would expect from a diversified faculty.

At the end of the semester, the students in all three groups took the standard department final examination at the regularly scheduled time.

RESULTS

Four subjects withdrew from the university prior to the completion of this study. Of these, two were in the SI group, one was in the SNI group and one was in the RNI group. Thus the data presented here are based on the following N counts: SI = 15, SNI = 17, RNI = 19.

The means and standard deviations for the SI, SNI, and RNI groups' performance on the 100 point objective grammar tests are presented in Table 1.

Table 1. Pre-Test/Post-test Means and Standard Deviations for SI, SNI, and RNI Objective Grammar Performance

	SI		SNI		RNI	
	Pre	Post	Pre	Post	Pre	Post
Mean	60.80	78.13	59.44	65.89	72.13	73.74
S.D.	10.27	14.99	8.13	10.69	7.34	8.34

The analysis of variance of objective grammar performance yielded significant between group differences ($F = 6.323$, df 2/49, $p < .05$), significant pre-post differences ($F = 35.685$, df 1/49, $p < .001$), and a significant group by pre-post interaction ($F = 11.88$, df 2/49, $p < .01$).

Newman-Keuls comparisons showing individual mean differences for objective grammar performance are shown in Table 2.

Table 2. Newman-Keuls Comparisons for Objective Grammar Test

	MEAN	SI-Post 78.13	RNI-Post 73.74	RNI-Pre 72.13	SNI-Post 65.89	SI-Pre 60.80	SNI-Pre 59.44
SI-Post	78.13	-	4.39	6.00	12.24**	17.33**	18.69**
RNI-Post	73.74		-	1.61	7.85*	12.94**	14.30**
RNI-Pre	72.13			-	6.24	11.33**	12.69**
SNI-Post	65.89				-	5.09	6.45
SI-Pre	60.80					-	1.36
SNI-Pre	59.44						-

* = $p < .05$

** = $p < .01$

We can see from Tables 1 and 2 that the SI group started well below and finished above the RNI group. Further, only the SI pre-post gains were statistically significant. This accounts for the significant group by pre-post interaction cited above.

The means and standard deviations for the SI, SNI, and RNI groups' rated grammar proficiency in theme writing are presented in Table 3. It will be recalled that themes were rated for grammar proficiency by three independent judges. The rating was on a scale from 0 to 9. Thus, the highest score obtainable was 27 (3 X 9). The average intercorrelation among raters was .65.[2]

Table 3. Pre-Test/Post-test Means and Standard Deviations for SI, SNI, and RNI Rated Grammar Proficiency in Theme Writing

	SI		SNI		RNI	
	Pre	Post	Pre	Post	Pre	Post
Mean	12.13	15.53	12.18	12.24	14.84	17.68
S.D.	3.85	5.26	5.46	4.27	4.27	3.28

The analysis of variance for rated grammar proficiency yielded significant group differences ($F = 6.123$, df 2/48, $p < .95$). The pre-post comparisons and the key group by pre-post interaction were not statistically significant.

Since the analysis of variance yielded neither a treatment effect nor a group by treatment interaction, we summed across pre-post

[2]Pearson product moment correlations were converted using a Fisher Z transformation before being averaged.

measures to do the individual comparisons. As would be expected, the significant group effect in the analysis of variance was due to differences between the RNI vs the SI group and the RNI vs the SNI group ($t = 2.17$, df 66, $p < .05$ and $t = 3.75$, df 70, $p < .01$ respectively).

DISCUSSION

The salient finding in this study is the group by pre-post interaction in the objective grammar measure and the lack of this interaction in the rated grammar measure. That is, special students who received individualized instruction started out significantly below a comparison group of regular students and finished the semester above those regular students, although this difference was not statistically significant. This finding runs counter to the pessimistic view of compensatory education expressed in the high profile literature. Our data, however, offer no surprises in light of the methods used. Bloom (1976) summarizes findings which support the generalization that relevant practice and time on task emerge as critical generic variables.

In the SI group students learned grammar in the context in which grammar skills would be tested. Test items in training were operationally defined with respect to criterion test items (Bormuth, 1970). Further, a student's grade in the course was contingent on his systematic progress through clearly specified grammar objectives.

The finding that the acquisition of these grammar skills did not transfer to theme writing is disappointing but again not surprising in light of a general theory of transfer. Transfer findings are frequently summarized in texts and reviews which typically speak of transfer being facilitated

when elements in the new situation are perceived as being similar to elements in original learning situations. Like elements transfer best.

In the present study, as in many veridical settings, the formal grammar training did not include elements that would approximate a theme writing task. That is, students were asked to identify sentence patterns. They were not asked to combine sentence patterns in connected discourse. In fact, paragraph writing and theme writing were formally designated a separate component of the course.

In short, these data support the notion that the grammar skills of academically deficient students can be substantially improved. These data do not support the notion that formal grammar ability transfers to theme writing; or do they?

An examination of Table 3 leaves us with the nagging doubt that there is indeed a transfer effect present, but due to the small n's we didn't have enough power in our F test to detect it. The possibility of this Type II error, notwithstanding, this discussion has focussed on the lack of effect because of both the data and the logic dictated by transfer theory.

Aside from the relatively small sample there are other weaknesses in this study which should be addressed before concluding. These weaknesses arise partly because the study falls more in the category of action research than laboratory research. For instance, the definition of the treatment variable is a general statement that a mastery approach was used. The literature is replete with similar statements which cite mastery learning or Keller (Bloom 1976) type approaches. A more stringent definition of the treatment variable is necessary. Likewise, "time on task" cited as a critical variable should be monitored more closely.

Further, the decision to focus on rated grammar proficiency rather than actual grammar performance in theme writing may be questioned. The reasoning here was that in veridical settings students are evaluated via the type of judgment represented in this study.

Finally, it would be helpful if future investigations focussed more on varying the degree of similarity between specific elements in original learning and transfer settings.

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